Articles

Adverse Effects of Topical Corticosteroid Use

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Topical corticosteroid use, a common and often efficacious therapy for a wide variety of cutaneous conditions, may have substantial adverse effects. These range from the notable nondermatologic side effects of hypothalamic-pituitary-adrenal axis suppression, Cushing's disease, femoral head osteonecrosis, and cataracts to a variety of less serious skin effects such as cutaneous tinea and contact dermatitis. The broad availability, efficacy, relative low cost, and ease of applying topical corticosteroids should not induce complacency or a cavalier attitude in prescribers. Physicians should have the same awareness of the possible side effects of topical steroid use as when prescribing parenteral medication.

(Fisher DA: Adverse effects of topical corticosteroid use. West J Med 1995; 162:123-126)

The introduction of the ultrahigh-potency topical corticosteroids has proved of important benefit for some hitherto corticoid-resistant dermatoses, but as in every new development in medicine, an adverse side to this therapeutic advance exists.

Fortunately, systemic side effects of topical corticosteroids are rare, but may occur, especially in infants[1] and elderly patients.[2(p81)] Possible systemic side effects are related directly to such factors as the application site, duration of application, potency, and occlusion of the medication.[2] The application of high-potency corticosteroids should be limited, when possible, to a twice-a-day basis for three to four weeks.[3] Longer and more frequent application of topical corticosteroids carries the risk of suppressing the hypothalamic-pituitary-adrenal axis and even producing Cushing's syndrome, especially in very young patients.[4-6] Physicians must also be aware of increased transcutaneous penetration in certain areas of the body with thin epidermis, such as the eyelids, periorbital area, axillas, crural region, and genitalia.[7] A patient with an integumentary perturbation, the quintessential example being exfoliating dermatitis, has a much greater amount of percutaneous penetration.[8] A recent report of topical clobetasol propionate-induced femoral head osteonecrosis describes additional serious systemic effects of topical high-potency corticosteroid use.[9]

Local side effects, unlike systemic ones, are relatively frequent and becoming even more so with the introduction of the ultrahigh-potency topical corticosteroids.[10] Striae distensae may develop, especially in the groin and axillas, with the prolonged application of even medium-potency corticosteroids (Figure 1).[11]

Clotrimazole and betamethasone dipropionate (Lotrisone), which can be an effective topical agent for treating intertrigo, with long-term use has the potential of rapidly inducing striae, especially in susceptible adolescents and younger adults when used more than seven to ten days in the crural, axillary, and flexural regions (Figure 2 and Figure 3). Another adverse effect that occurs more often in older persons and in young children, but that can occur in all age groups, is cutaneous atrophy with telangiectasia and stellate pseudoscars, especially with the prolonged use of the high- and ultrahigh-potency topical corticosteroids (Figures 4, 5, and 6).[12,13] Adverse effects of topical corticosteroid use on the supporting collagen stroma, by inhibiting collagen production of fibroblasts, may lead to the occurrence of purpura and induce or aggravate Bateman's senile purpura.[14] Clinicians generally should eschew the use of anything but low-potency corticosteroids on the face because of the rapid induction of erythema, corticoid rosacea, and perioral and periocular acneiform dermatoses (Figure 7).[15]

Unfortunately, the pharmaceutic industry has not always been vigilant in warning physicians concerning these possible adverse effects. An example is with mometasone furoate (Elocon), which was promoted as being safe for facial conditions, but in reality is a medium-potency steroid. Succumbing to a representative's enthusiastic sales pitch for the medication and assurances that it was safe for facial use, I produced a case of this syndrome. I have since managed several cases of mometasone-induced steroid rosacea. After complaints from me and others, the company now states that it is safe to use only for two weeks for facial dermatoses.

I strongly entreat clinicians to minimize the use of medium- and high-potency corticoids on the face of any patient. The lower-potency corticosteroids such as desonide, and even 2% to 0.5% hydrocortisone, should have adequate anti-inflammatory therapeutic benefit without the risk of producing often-difficult-to-manage steroid rosacea and erythema. Indeed, a problem with a medium- and higher-potency corticosteroid on the face is that it induces rebound erythema in which the topical corticosteroid initially causes vasoconstriction, but when

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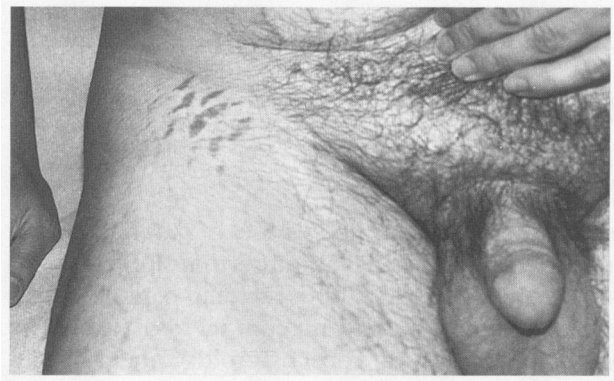

Figure 1.—Striae occur in the groin due to the use of topical clotrimazole and betamethasone dipropionate (Lotrisone).

withdrawn, produces vasodilation higher than the baseline in a trampoline-like manner.[15] I have found a course of tetracycline or erythromycin, perhaps a short burst of intermittent parenteral corticosteroids, and time to be the only approach that benefits this most distressing condition. Topical corticosteroids can facilitate the proliferation of *Propionibacterium acnes*, and perhaps *Demodex folliculorum*, leading to an acne rosacea-like condition (Figure 7) that, fortunately, is often amenable to parenteral antibiotics coupled with topical keratolytic and antibacterial agents.[16,17] The long-term application of topical corticosteroids can induce milia in older patients.[18]

A prolonged use of topical corticosteroids on the eyelids can not only cause thinning of the eyelids but also induce open-angle glaucoma and cataracts from transpalpebral tarsal penetration.[19] Topical corticosteroids may suppress the normal cutaneous immune response to dermatophytes and thus enhance fungal infections. This can present an atypical clinical picture, to which the rubric tinea incognito has been applied.[20] I have observed cases of tinea in which betamethasone, a valuable corticosteroid moiety of Lotrisone, seemed to have a dominant effect over the antifungal aspect of the clotrimazole and worsened rather than cleared the cutaneous tinea. Cutaneous dermatophyte infections

TABLE 1.—*Possible Adverse Effects of Topical Corticosteroid Use*

Systemic Absorption	
Hypothalamic-pituitary-adrenal axis suppression	
Cushing's disease	
Femoral head osteonecrosis	
Local Effects	
Striae distensae	Milia
Cutaneous atrophy	Cataracts
Stellate pseudoscars	Tinea
Telangiectasia	? Candidiasis
Purpura	Scabies
Erythema	Hypertrichosis
Rosacea	Hypopigmentation
Acneiform dermatoses	Contact dermatitis
Rebound erythema	Tachyphylaxis
Demodicidosis	

should be treated only with a topical fungicide. A clinical study of 176 patients with potassium hydroxide and fungal culture-proven tinea pedis unequivocally documents the superiority of a single antifungal topical agent, in this instance naftifine hydrochloride, over the antifungal corticosteroid combination of clotrimazole and betamethasone proprionate.[21] The decision whether to use oral antifungal therapy is a matter of clinical judgment. Topical corticosteroid use may promote cutaneous candidiasis, although experimental proof of this is lacking.[22] Local steroid use may induce atypical or extensive crusted scabies.[23] Hypertrichosis is a rare side effect of the long-term use of topical steroids. When it does occur, it is most prevalent on the face and ears.[24] Hypopigmentation from high- and ultrahigh-potency steroids is a possible consequence when used on a dark-skinned person.[25]

Reports of cases of type IV allergic contact dermatitis due to local steroid use are increasing.[26] The rash may be chronic, erythematous, edematous, papular, and at times scaly, as opposed to the usual microvesicular eczema of acute contact dermatitis. This somewhat alarming development has not been totally elucidated,

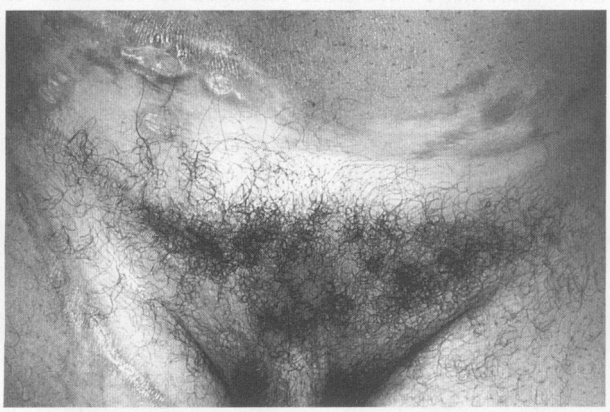

Figure 2.—Striae and skin breakdown due to the use of topical medium-potency corticosteroids are shown.

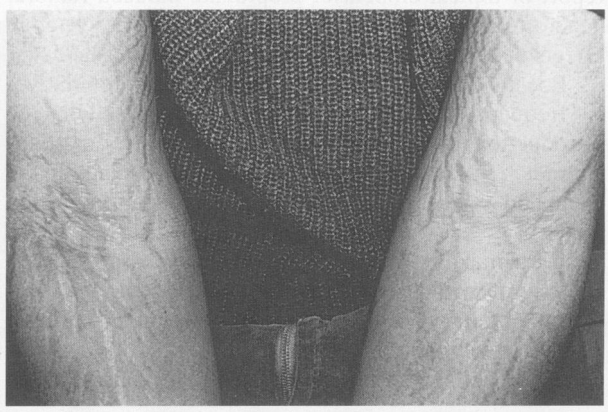

Figure 3.—Higher-potency topical corticosteroid use produced striae on the arms.

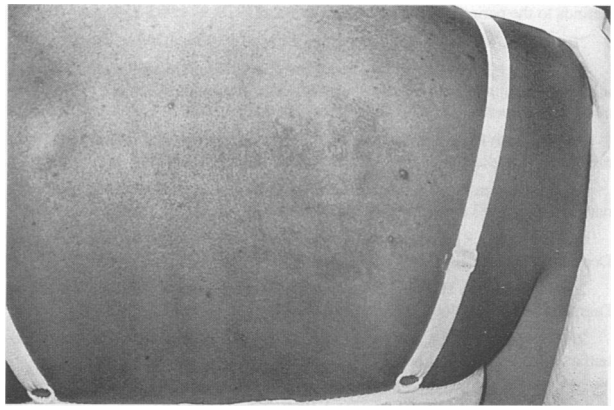

Figure 4.—Cutaneous atrophy is shown from intralesional corticosteroid therapy.

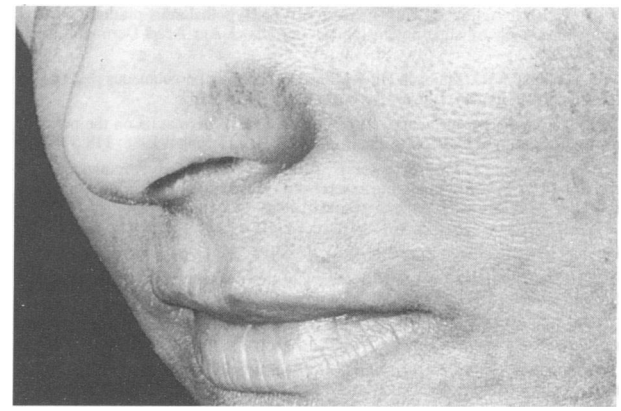

Figure 6.—Telangiectasia of the nose has occurred from the use of topical medium-potency corticosteroids.

but is the cause of some cases of corticosteroid-resistant dermatitis.[27] Unfortunately, the screening corticosteroids tixocortol pivalate and budesonide are unavailable for patch tests in the United States because of the Food and Drug Administration (FDA) requirement that allergens for patch testing are a medication and must be FDA-approved.[28] The use of these chemicals does not identify all cases of corticosteroid hypersensitivities, but according to a recent report, it identifies more than 80% of them.[29]

Practitioners should also be mindful of the possibility of allergic contact dermatitis due to certain excipients of varying concentrations in topical corticosteroid preparations. These may be type IV delayed-hypersensitivity sensitizers, such as lanolin, paraben, and quaternium 15, or chemicals capable of producing an immediate contact urticaria, either on a nonimmunologic histamine-releasing basis or from an immunoglobulin E-mediated, type I immediate reaction.[30] The preservatives sorbic acid, benzoic acid, and formaldehyde are examples of such contact urticaria inducers.[31]

Topical corticosteroids may induce tachyphylaxis with extended use.[32] This occurs most often in patients with psoriasis. This is an another reason why it is recommended that the frequency of the application of ultrahigh-potency topical corticoids be reduced after the first two to three weeks to no more than four or five times a week.

Physicians are always mindful of the possible adverse systemic effects of the use of parenteral medications. We should be no less mindful of the possible undesirable side effects of this therapeutically valuable topical medicament.

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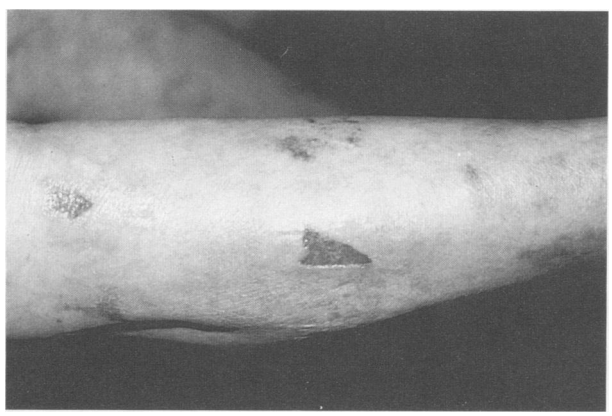

Figure 5.—Higher-potency topical corticosteroid use produced cutaneous atrophy with resultant skin fragility and erosions.

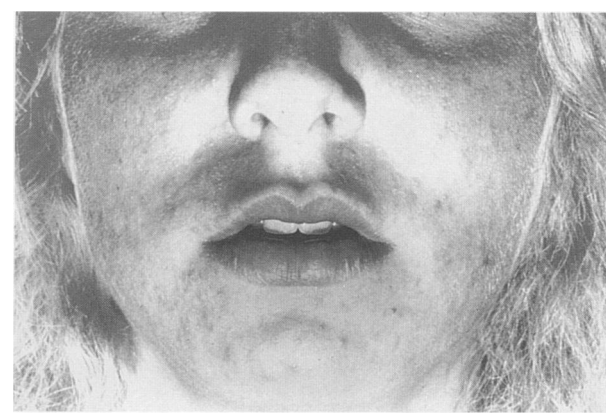

Figure 7.—The photograph shows topical corticosteroid-induced acne rosacea.

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